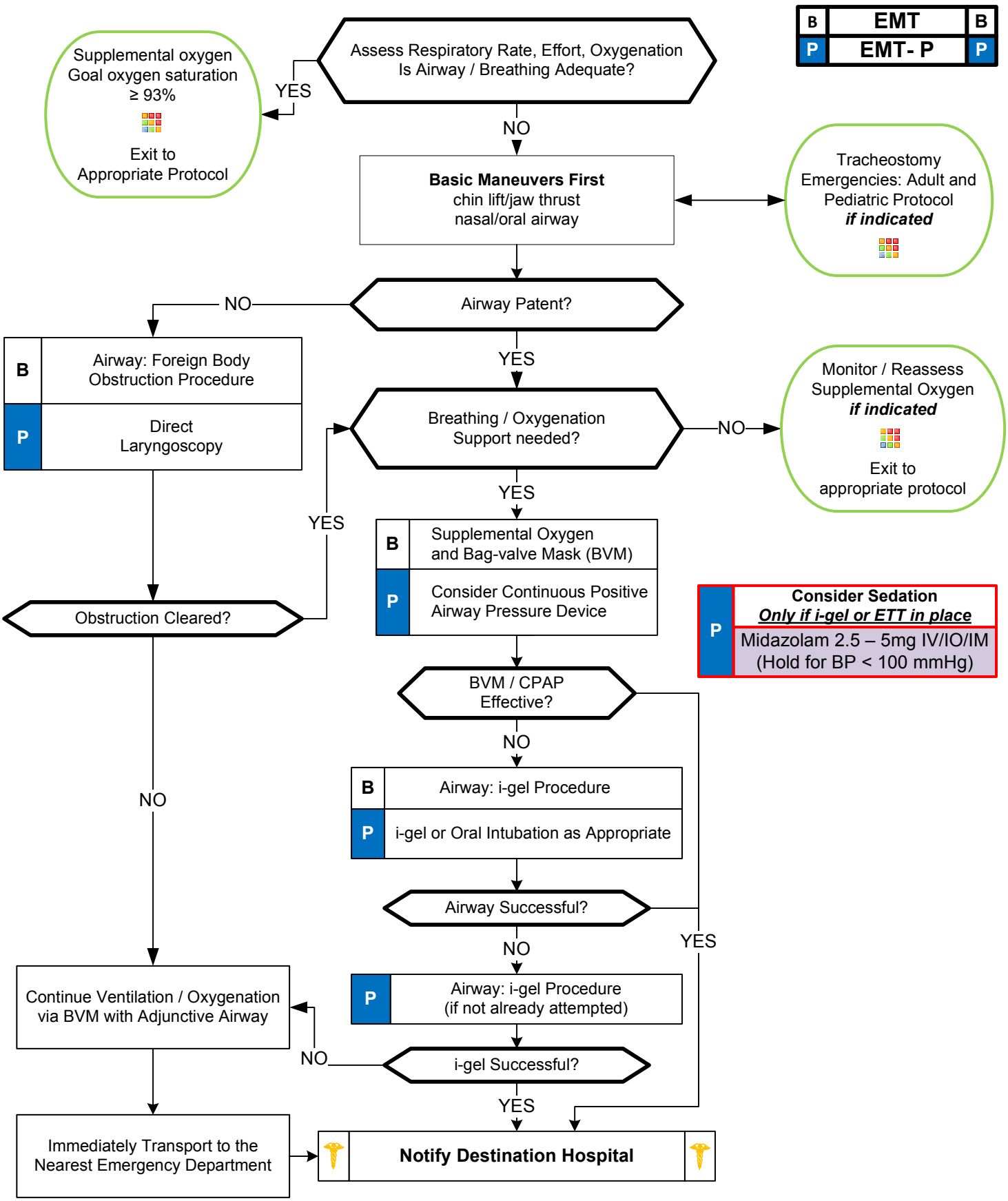
Airway



Adult Medical Protocols

Airway

Always weigh the risks and benefits of endotracheal intubation in the field against transport. All prehospital endotracheal intubations are to be considered high risk. If ventilation / oxygenation is adequate, transport may be the best option. The most important airway device and the most difficult to use correctly and effectively is the Bag Valve Mask (not the laryngoscope).

Few prehospital airway emergencies cannot be temporized or managed with proper BVM techniques.

Difficult Airway Assessment

Difficult BVM Ventilation-MOANS: Difficult **M**ask seal due to facial hair, anatomy, blood or secretions / trauma; **O**bese or late pregnancy; **A**ge > 55; **N**o teeth (roll gauze and place between gums and cheeks to improve seal); **S**tiff or increased airway pressures (Asthma, COPD, Obese, Pregnant).

Difficult Laryngoscopy-LEMON: Look externally for anatomical distortions (small mandible, short neck, large tongue); **E**valuate 3-3-2 Rule (Mouth open should accommodate 3 patient fingers, mandible to neck junction should accommodate 3 patient fingers, chin-neck junction to thyroid prominence should accommodate 2 patient fingers); **M**allampati (difficult to assess in the field); **O**bstruction / Obese or late pregnancy; **N**eck mobility.

Difficult i-gel-RODS: Restricted mouth opening; **O**bstruction / Obese or late pregnancy; **D**istorted or disrupted airway; **S**tiff or increased airway pressures (Asthma, COPD, Obese, Pregnant);

Trauma: *Utilize in-line cervical stabilization during intubation, i-gel or BVM use. During intubation or i-gel the cervical collar front should be open or removed to facilitate translation of the mandible / mouth opening.*

Pearls

- **Continuous Waveform Capnography (EtCO2) use is mandatory for the confirmation of endotracheal tube placement as well as mandatory for the continuous monitoring of all patients with an i-gel or endotracheal tube in place.. Document results. [* Color Capnometry will only to be utilized if Waveform Capnography is inoperative.]**
- **If an effective airway is being maintained by BVM and/or basic airway adjuncts (e.g. nasopharyngeal airway, i-gel) with continuous pulse oximetry values of ≥ 90% or values expected based on pathophysiologic condition with otherwise reassuring vital signs (e.g. pulse oximetry of 85% with otherwise normal vitals in a post-drowning patient), it is preferable to continue with basic airway measures instead of endotracheal intubation. Consider CPAP as indicated by protocol and patient condition.**
- **For the purposes of this protocol, a secure airway is achieved when the patient is receiving appropriate oxygenation and ventilation!**
- **An "Intubation Attempt" is defined as passing the laryngoscope blade past the teeth with the intention of performing endotracheal intubation. (Preview of the airway with a laryngoscope blade in consideration of passing an ETT is considered an attempt.)**
- **An "i-gel Attempt" is defined as passing the i-gel tube past the teeth.**
- **An appropriate ventilatory rate is one that maintains an EtCO2 of 35-45. Avoid hyperventilation!**
- Maintain C-spine immobilization during i-gel or ETT placement for patients with suspected spinal injury.
- Do not assume hyperventilation is psychogenic– use oxygen for goal Sp02 of ≥ 93%, not a paper bag.
- Cricoid pressure and BURP maneuver may assist with difficult intubations. They may worsen view in some cases.
- Slight hyperventilation in deteriorating head trauma should only be done to maintain an $EtCO_2$ of 30-35.
- Gastric tube placement may be considered in intubated patients if available and time allows.
- It is important to secure an i-gel or ETT well to maintain placement. Manual stabilization of the i-gel or endotracheal tube should be used during all patient moves / transfers.
- **Nasotracheal intubation is no longer permitted!**

Airway

A failed airway occurs when a provider begins a course of airway management and identifies that that method will not succeed.

Conditions which define a Failed Airway:
1. Unable to Ventilate and Oxygenate adequately during or after one (1) or more unsuccessful i-gel or intubation attempts and anatomy inconsistent with continued attempts
2. Three (3) failed attempts at intubation by the most experienced prehospital provider on scene in a patient who requires an advanced airway to prevent death, OR
3. Unable to maintain adequate oxygen saturation with BVM techniques and insufficient time to attempt alternative maneuvers.

It should be noted that a patient with a "failed airway" is one who is near death or dying, not stable or improving. Patients who cannot be intubated or who do not have an Oxygen Saturation greater than 90% do not necessarily have a failed airway. Many patients who cannot be intubated easily may be sustained by basic airway techniques and BVM, with stable if not optimal Oxygen Saturation, i.e. stable (not dropping) SpO2 values as expected based on pathophysiologic condition with otherwise reassuring vital signs (e.g. consistent pulse oximetry of 85% with otherwise normal or near-normal vitals in a post-drowning patient)

The most important way to avoid a failed airway is to identify patients with expected difficult airway, difficult BVM ventilation, difficult i-gel, or difficult laryngoscopy. Please refer to page 2 for information on how to identify the patient with a potential difficult airway.

Position of patient: In the field, improper position of the patient and rescuer are responsible for many failed and difficult intubations. Often this is dictated by uncontrolled conditions present at the scene and we must adapt. However many times the rescuer does not optimize patient and rescuer position. The sniffing position or the head simply extended upon the neck are probably the best positions. The goal is to align the ear canal with the suprasternal notch in a straight line.

In the **obese or late pregnant patient** elevating the torso by placing blankets, pillows or towels will optimize the position. This can be facilitated by raising the head of the cot.

Use of cot in optimal patient / rescuer position: The cot can be elevated and lowered to facilitate intubation. With the patient on the cot raise until the patients nose is at the level of your umbilicus which will place you at the optimal position.

Trauma: *Utilize in-line cervical stabilization during intubation, i-gel or BVM use. During intubation or i-gel placement the cervical collar front should be open or removed to facilitate translation of the mandible / mouth opening.*

Pearls

- **If intubation attempt fails, make an adjustment and then consider:**
  - Different laryngoscope blade
  - Gum Elastic Bougie
  - Different ETT size
  - Change cricoid pressure. Cricoid pressure is no longer routinely recommended and may worsen view.
  - Apply BURP maneuver (Push trachea Back [posterior], Up, and to patient's Right)
  - Change head positioning
  - i-gel
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- **Notify Receiving Hospital AS EARLY AS POSSIBLE about the patient's difficult / failed airway.**
- **If an effective airway is being maintained by BVM and/or basic airway adjuncts (e.g. nasopharyngeal airway, i-gel) with continuous pulse oximetry values of ≥ 90% or stable values as expected based on pathophysiologic condition with otherwise reassuring vital signs (e.g. consistent pulse oximetry of 85% with otherwise normal vitals in a post-drowning patient), it is acceptable to continue with basic airway measures instead of endotracheal intubation. Consider CPAP as indicated by protocol and patient condition.**
- **If scene resources allow, do not hesitate to contact On-Line Medical Control regarding decision-making for patients with a difficult / failed airway.**